

Docket No.: 02-41 US

REMARKS

This is a response to the Office Action mailed on December 31, 2007. Claims 1-7 were pending in the subject patent application and were rejected by the Examiner. By this submission the Applicant amended claims 1,4,5 and 6 and canceled claim 2 without prejudice. No new matter has been introduced.

Claim Rejections - 35 U.S.C. § 112

The Examiner rejected claims 5-7 as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as invention. The Examiner correctly pointed out that there is only one step of forming a cavity cited in claim 4. The Applicant amended claim 5 and 6 to clearly state that step of forming a cavity (claim 4) further requires extending the cavity over a part of the cylindrical body (claim 5) and forming a central bore on a bottom of the cavity (claim 6). In view of the amendments made to these claims, Applicant respectfully submits that claims 5-7 are now patentable under 35 U.S.C. § 112 and respectfully requests that this rejection be withdrawn.

Claim Rejections - 35 U.S.C. § 102

The Examiner rejected claims 1-5 as being anticipated by Shigihara et al (US patent No. 6,094,815). To better distinguish the Shigihara reference and claimed invention, the Applicant amended claim 1 by introducing therein the limitation of canceled claim 2 and clarifying further the step of forging the workpiece. The amended claim 1 is not anticipated Shigihara et al teaching for the following reasons.

Shigihara et al claim [see column 5, claim 1] a method of manufacturing a rotor for a vane compressor, which comprises such steps as cutting a continuous cast rod into a workpiece having a predetermined length; heating said workpiece and then fitting the same in a die assembly; and forming a plurality of vane slits and a shaft hole in said workpiece fitted in said die assembly, by forging.

According to Shigihara, the workpiece undergoes a thermal treatment (heating) and then is worked by forging so as to obtain a plurality of vane slits. The Shiriara et al teach a method of manufacturing a rotor, where the workpiece does not undergo any preliminary mechanical treatment and no intermediate semi-finished product is obtained. Moreover, in Shigihara the purpose of the forging step is that of obtaining a plurality of slits, while according to the present

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invention forging step is conducted for providing a preliminary treatment of the workpiece in order to obtain a semi-finished product with a desired mechanical properties. Only after forging step, the finished product (i.e. the rotor provided with sets of peripheral radial vanes) is obtained by mechanical working, as explicitly cited in amended claim 1. According to amended claim 1 during the forging step the workpiece is axially compressed and at the same time its radial expansion is prevented.

Applicant respectfully submits that contrary to the Examiner's statement, the upper die 10 of Shigihara does not prevent radial expansion of the billet. Indeed, Shigihara asserts that: *"in performing the rotor material, it is possible to use a billet 101 of a smaller diameter and compress the same by upsetting in an axial direction such that it is formed to have a smaller length and a larger cross section."* [see column 4, lines 15 - 19]. This means that the billet 101 radially expands inside the die.

The different impact on the workpiece with respect to radial expansion during forging fully reflects the different purposes of the forging step in Shigihara et al on one hand and in the present invention on the other. Following Shigihar teaching, the person skilled in the art would have been led to try to manufacture a finished rotor by forging of a raw, unprocessed workpiece. Therefore the present invention is novel and non obvious over Shigihara et al because manufacture of a rotor by mechanical working starts from obtaining a forged intermediate semi-finished product with desired mechanical properties, which is a critical step for performing the claimed method, which among other benefits ensure a long operating life of the rotor.

In view of the amendments made to claim1, Applicant respectfully submits that claims 1-5 are patentable under 35 U.S.C. § 102 and respectfully requests that this rejection be withdrawn.

Claim Rejections - 35 U.S.C. § 103

The Examiner rejected claim 6 as being unpatentable over Shigihara et al in view of Papst et al (US pat. No. 3,786,290) and further in view of Parizek (US pat. No. 4,789,410) and claim 7 as unpatentable over Shigihara et al and Sun (US pat. No.5,507,617). Claims 6 and 7 depend on claim 1 are patentable over the cited references for at least the same reason as claim 1. More over, the patent disclosures of all secondary references do not even mentioning the forging step.

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In view of the foregoing, Applicant respectfully submits that claims 6 and 7 patentable under 35 U.S.C. § 103 over cited prior art and Applicant respectfully requests that this rejection be withdrawn.

CONCLUSION

In light of the above amendments and remarks, it is believed that the present application is now in proper condition for allowance, and an early notice to such effect is earnestly solicited. The Examiner is requested to call the undersigned at the telephone number listed below if this communication does not place the case in condition for allowance.

Respectfully submitted,



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